

## CLAIMS

What is claimed is:

1. A reamer for reaming a bone or a cartilage, or combination thereof, during surgery, wherein the reamer includes a hollow body of a generally dome shape having a rotational axis, comprising an interior portion and a surface, the surface comprising a plurality of raised edges for cutting the bone or the cartilage, and a plurality of openings for passing of fragments of the bone or the cartilage into the interior portion of the reamer, the surface forming a first portion which is dimensioned substantially as a surface of rotation about the rotational axis, and at least one second portion, the second portion not forming a surface of rotation about the rotational axis and located generally more closely to the rotational axis than the first portion, the second portion thereby reducing a dimension of the dome in at least one dimension transverse to the rotational axis of the dome.
2. The reamer of Claim 1, wherein the second portion forms substantially a plane.
3. The reamer of Claim 1, wherein the second portion is oriented in a plane parallel to the rotational axis.
4. The reamer of Claim 2, including two second portions.
5. The reamer of Claim 4, wherein the two second portions are located in planes substantially parallel to one another.
6. The reamer of Claim 1, wherein the raised edges are confined to the first portion.
7. The reamer of Claim 4, wherein the raised edges are confined to the first portion.

8. The reamer of Claim 1, wherein the surgery is a hip replacement arthroplasty and the bone and the cartilage are the acetabulum of an animal or a human.

9. A reamer for reaming a bone or a cartilage, or a combination thereof, during surgery, wherein the reamer is a hollow body of a general dome shape having a rotational axis, comprising an interior portion and a surface, comprising a plurality of raised edges for cutting the bone or the cartilage or combination thereof, and a plurality of openings for passing of fragments of the bone or the cartilage into the interior portion of the reamer, wherein the raised edges are confined to one or more sectors of the surface of the reamer, the sectors occupying substantially less than half of area of the surface of the reamer.

10. The reamer of Claim 9, wherein the raised edges are confined to a band straddling a middle portion of the dome shape.

11. The reamer of Claim 10, wherein the surface includes a first portion which is dimensioned substantially as a surface of rotation about the rotational axis, and at least one second portion, the second portion not forming a surface of rotation about the rotational axis and located generally more closely to the rotational axis than the first portion, the second portion thereby reducing a dimension of the dome in at least one dimension transverse to the rotational axis of the dome.

12. The reamer of Claim 10, wherein the surgery is a hip replacement arthroplasty and the bone and the cartilage are in the acetabulum of an animal or a human.

13. A method of conducting prosthetic surgery in hip or shoulder joint of a patient using a reamer, comprising:

providing a reamer which includes a hollow body of a generally dome shape having a rotational axis, comprising an interior portion and a surface, the surface comprising a plurality of raised edges for cutting a bone or a cartilage, and a plurality of openings for passing of fragments of the bone or the cartilage into the interior portion of the reamer, the surface formed of a first portion which is dimensioned substantially as a surface of rotation about the rotational axis, and at least one second portion, the second portion not forming a surface of rotation about the rotational axis and located generally more closely to the rotational axis than the first portion, the second portion, thereby reducing a dimension of the dome in at least one dimension transverse to the rotational axis of the dome;

attaching the reamer to a handle;

inserting the reamer into a site for removal of the bone or the cartilage from a socket of the patient;

reaming the bone and the cartilage with the reamer;

removing the reamer from the site for removal of the bone or the cartilage;

preparing a bone adapted to fit in the socket;

installing a first prosthetic component in the socket;

installing a second prosthetic component in the bone adapted to fit in the socket; and

completing the surgery.

13. The method of Claim 12, wherein the second portion forms substantially a plane.

14. The method of Claim 12, wherein the second portion is oriented in a plane parallel to the rotational axis.

15. The method of Claim 13, wherein the reamer comprises two second portions.

16. The method of Claim 15, wherein the two second portions are substantially parallel to each other.

17. The method of Claim 13, wherein the raised edges are confined to the first portion of the reamer.

18. The method of Claim 15, wherein the raised edges are confined to the first portion of the reamer.

19. The method of Claim 12, wherein the surgery is a hip replacement arthroplasty and the socket is the acetabulum of a animal or a human.

20. A method of conducting surgery on the socket joint of a patient, the socket joint formed of a first bone having a socket and a second bone adapted to fit into the socket, comprising:

providing a reamer formed of a hollow body having a dome shape, comprising an interior portion and a surface, comprising a plurality of raised edges for cutting a bone or a cartilage, and a plurality of openings for passing of fragments of the bone or the cartilage into the interior portion of the reamer, wherein the raised edges are confined to one or more portions of the surface of the reamer, the portions occupying substantially less than half of the area of the surface of the reamer body;

attaching the reamer to a handle;

inserting the reamer into a site for removal of the bone or the cartilage;

reaming the socket with the reamer;

removing the reamer from the site for removal of the bone or the cartilage;

preparing the bone adapted to fit into the socket;

installing a prosthetic component in the socket;

installing a prosthetic component in the bone adapted to fit the socket; and

completing the surgery.

21. The reamer of Claim 20, wherein the raised edges are confined to a band straddling a middle portion of the surface of the reamer body.

22. The reamer of Claim 20, wherein at least one side of the reamer body comprises an opening along a plane substantially parallel to the rotational axis, or angled inwards relative to the rotational axis, thereby reducing a dimension of the dome in at least one dimension transverse to the rotational axis of the dome.

23. The reamer of Claim 20, wherein the surgery is a hip replacement arthroplasty and the socket is the acetabulum of an animal or a human.